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IS 13097 (1991): Fluvalinate, Technical [FAD 1: Pesticides and Pesticides Residue Analysis]

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IS 13097 : 1991

(Reaffirmed 2012)

भारतीय मानक

फ्लूवेलिनेट, तकनीकी

Indian Standard

FLUVALINATE, TECHNICAL

UDC 632·951 FLU 006·354

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

July 1991

Price Group 1

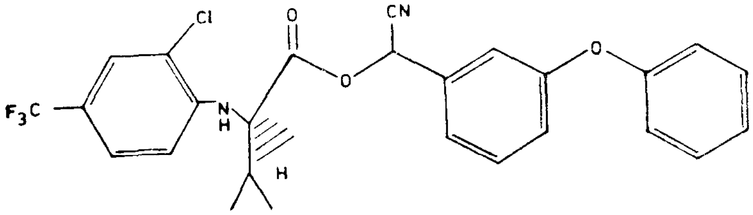
Pesticides Sectional Committee, FADC 1

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Pesticides Sectional Committee had been approved by the Food and Agriculture Division Council.

Fluvalinate, technical is employed in the preparation of insecticidal formulations.

Fluvalinate is the common name for (*RS*)-α-cyano-3-phenoxybenzyl (*R*)-2-[2-chloro-4-(trifluoromethyl) anilino-3-methyl butanoate]. The empirical and structural formulae and the molecular mass of fluvalinate are given below:

Empirical Formula	*Structural Formula*	*Molecular Mass*
$C_{26}H_{22}ClF_3N_2O_3$		502·92

In the preparation of this standard due consideration has been given to the provisions of the *Insecticides Act*, 1968 and the Rules framed thereunder. However, this standard is subject to the restrictions imposed under these, wherever applicable.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

FLUVALINATE, TECHNICAL

1 SCOPE

This standard prescribes the requirements and methods of sampling and test for fluvalinate, technical.

2 REFERENCES

The Indian Standards listed in Annex A are necessary adjuncts to this standard.

3 REQUIREMENTS

3.1 Description

The material shall be in the form of a viscous, yellow to brown liquid, free from visible extraneous impurities or added modifying agents.

3.2 The material shall also comply with the requirements specified in Table 1.

Table 1 Requirements for Fluvalinate, Technical

(*Clauses* 3.2 *and* 7.1)

Sl No.	Characteristic	Requirement	Method of Test, Ref to	
			Annex of This Standard	Clause No. of IS 6940 : 1982
(1)	(2)	(3)	(4)	(5)
i)	Fluvalinate content, percent by mass, *Min*	88·0	B	—
ii)	Moisture content, percent by mass, *Max*	0·5	—	4
iii)	Material insoluble in acetone, percent by mass, *Max*	0·5	—	9
iv)	Acidity (as H_2SO_4), percent by mass, *Max*	0·5	—	11.3.2

4 PACKING

The material shall be packed in mild steel drums suitably and properly lacquered from inside.

The containers shall also comply with the general requirements as specified in **2** of IS 8190 (Part 2) : 1988.

5 MARKING

5.1 The container shall bear legibly and indelibly the following information in addition to any other information as is necessary under the *Insecticides Act*, 1968 and the Rules framed thereunder:

a) Name of the material;

b) Indication of the source of manufacture;

c) Batch number;

d) Date of manufacture;

e) Date of expiry;

f) Fluvalinate content, percent (*m/m*);

g) Net mass of contents; and

h) The cautionary notice worded as in the *Insecticides Act*, 1968 and its Rules.

5.2 The container may also be marked with the Standard Mark.

6 SAMPLING

Representative samples of the material shall be drawn as prescribed in IS 10946 : 1984.

7 TESTS

7.1 Tests shall be carried by the appropriate methods referred to in col 4 and 5 of Table 1.

7.2 Quality of Reagents

Unless specified otherwise, pure chemicals and distilled water (*see* IS 1070 : 1977) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

ANNEX A

(*Clause* 2)

LIST OF REFERRED INDIAN STANDARDS

IS No.	*Title*
1070 : 1977	Water for general laboratory use (*second revision*)
6940 : 1982	Methods of test for pesticides and their formulations (*first revision*)
8190 (Part 2) : 1988	Requirement for packing of pesticides ; Part 2 Liquid pesticides (*second revision*)
10946 : 1984	Methods of sampling for technical grade pesticides

ANNEX B

[*Table* 1, *Sl. No.* (i)]

DETERMINATION OF FLUVALINATE CONTENT

B-1 GENERAL

Fluvalinate content is determined using an internal standard on a gas liquid chromatograph, equipped with a flame ionization detector.

B-2 APPARATUS

B-2.1 Gas Liquid Chromatograph

A gas liquid chromatograph, equipped with a flame ionization detector and coupled to a printer plotter *cum* integrator is operated under the following suggested operating parameters. These parameters may be varied as per available facilities, provided standardization is done.

Column	Glass, 0·5 m length and 0·2 mm ID, packed with 3 percent *OV*-101 chromosorb *W-AW-DMCS* (80-100 mesh)
Carrier gas and flow rate	Nitrogen; 30 ml/min
Temperature	
Column	220°C
Injector	240°C
Detector	270°C

B-2.2 Micro-Syringe — 10-μl capacity.

B-3 REAGENTS

B-3.1 Fluvalinate Reference Standard — of known purity.

B-3.2 Internal Standard (*n*-dotriacontane) — 99 percent plus purity.

B-3.3 Hexane — analytical reagent grade.

B-3.4 Toluene — analytical reagent grade.

B-4 PROCEDURE

B-4.1 Preparation of Internal Standard Solution

Weigh accurately about 500 mg *n*-dotriacontane into a 100-ml volumetric flask, dissolve in 3 : 1 (*v*/*v*) hexane-toluene solution and make up the volume to the mark with the same solution. This solution will contain 5 mg/ml of internal standard.

B-4.2 Preparation of Reference Standard Solution

Weigh accurately a quantity of reference standard, equivalent to 50 mg fluvalinate into a 50-ml volumetric flask. Add 10 ml internal standard solution and dilute the mark with 3 : 1 (*v*/*v*) hexane-toluene solution. Shake vigorously to dissolve.

B-4.3 Preparation of Sample Solution

Weigh accurately a quantity of sample containing equivalent to 50-mg of fluvalinate into a 50-ml volumetric flask. Add 10 ml internal standard and dilute to the mark with 3 : 1 (*v*/*v*) hexane-toluene solution. Shake vigorously to dissolve.

B-4.4 Analysis of the Sample

B-4.4.1 Inject 2 μl of reference standard solution and if necessary, adjust the GLC pararmeters to give a complete separation within a reasonable time and peak height half to three-fourth full scale. Repeat the injections till the response factor stabilises within ± 1 percent. Inject sample solution and proceed with determination of fluvalinate content ensuring that at least one reference standard injection is placed after every fourth of fifth sample injection, followed by one at the end of the run.

B-4.4.2 Measure the peak areas of fluvalinate reference standard, internal standard and sample. Determine the response factors and calculate the active ingredient content in the sample.

B-5 CALCULATION

Fluvalinate content, percent by mass =

$$\frac{M_1 \times R_2}{M_2 \times R_1} \times P$$

where

M_1 = mass, in g, of fluvalinate reference standard;

$R_2 = \dfrac{\text{peak area of sample}}{\text{peak area of internal staudard}}$;

P = percent purity of fluvalinate reference standard;

M_2 = mass, in g, of the sample taken for test; and

$R_1 = \dfrac{\text{peak area of fluvalinate reference standard}}{\text{peak area of internal standard}}$

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